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ACTUAL WEIGHT AND BALANCE REPORT

BOILERPLATE NO. 2

COMMAND MODULE FOR LAND AND WATER IMPACT

CONTRACT 9-150

(U)

4.5.45

ISSUED 12 JUNE 1963

PREPARED BY

WEIGHT CONTROL GROUP

[redacted]

CLASSIFICATION CHANGE

To UNCLASSIFIED

By authority of GDS-EO 11652

Changed by L Shirley Date 12/31/72

Classified Document Master Control Station, NASA

Scientific and Technical Information Facility

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NORTH AMERICAN AVIATION, INC.
SPACE and INFORMATION SYSTEMS DIVISION

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ACTUAL WEIGHT AND BALANCE REPORT

FOR

BOILERPLATE NO. 2

COMMAND MODULE FOR LAND AND WATER IMPACT

INTRODUCTION

Boilerplate No. 2 Command Module actual weight and balance determination was conducted by the Apollo Weight Control Group personnel at the Space and Information Systems Division of North American Aviation, Inc. The proceeding took place on May 17, 1963.

The Weight, Balance and Inertia Summary presents data for the lunar mission-earth landing condition. This condition simulates the Command Module weight and center of gravity with the forward heat shield jettisoned and all chutes, drogue, pilot and main, deployed.

Additional actual weight and balance determinations will be made in the field at various times and will be incorporated as an appendix to this report.

[redacted]

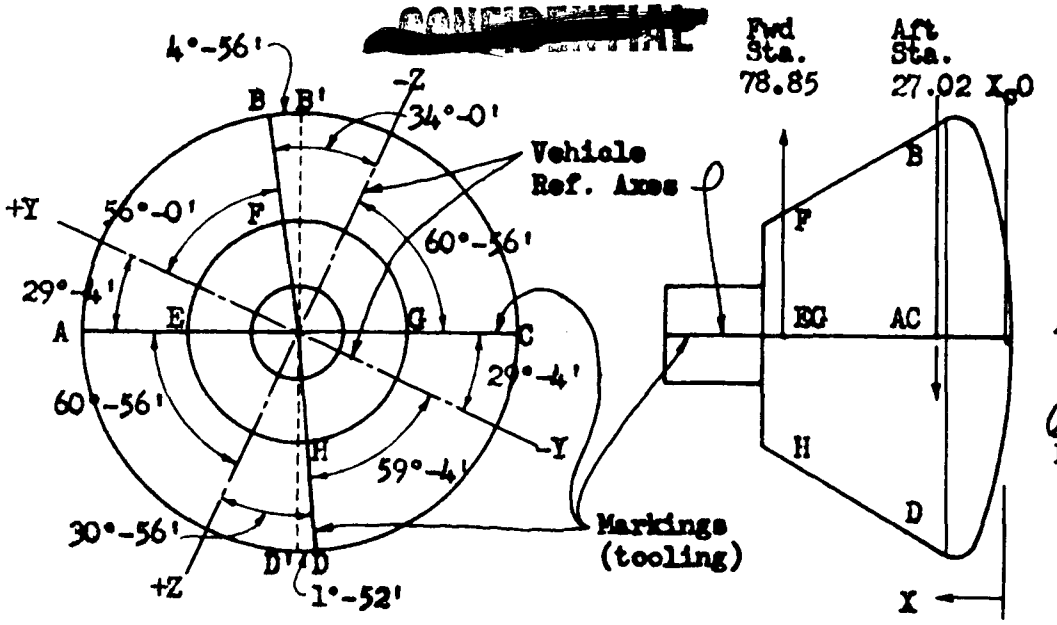
WEIGHT, CENTER OF GRAVITY AND INERTIA SUMMARY

COMMAND MODULE FOR LAND AND WATER IMPACT

BOILERPLATE NO. 2

ITEM	WEIGHT	CENTER OF GRAVITY*			MOMENT OF INERTIA (SLUG FT.^{2})		
		Xa	Ya	Za	ROLL (X)	PITCH (Y)	YAW (Z)
TOTAL COMMAND MODULE AT IMPACT	7840	1039.6	-0.1	7.7	4341	3329	2967

NOTE: *Centers of gravity are in the NASA reference system except that the longitudinal has an origin 998.7 inches below the tangency of the Command Module structure mold line.



Approved:

R A Petrey
Project Office

*Weight of fwd. fittings deducted from average reading (35 lbs.)

ACTUAL WEIGHT & BALANCE
BOILERPLATE NO. 2

Name: G. W. Mann
Date: May 17, 1963

DESCRIPTION		AVER. READING	± CORR.	WEIGHT	LONG.	MOM.	LAT.	MOM.	VERT.	MOM.
Fwd Jack Position	G	1818	- 6	* 1812	78.85	142876			0	0
	F	1795	+ 4	* 1799	78.85	141851	4.15	7466		
Aft Jack Position	B'	2643	-15	2628	27.02	71009			-75.84	-199308
	A	3118	- 5	3113	27.02	84113	76.12	236962		
Aft Jack Position	D'	3322	+ 8	3330	27.02	89977			76.08	253346
	C	2828	0	2828	27.02	76413	-76.12	-215267		
GROSS (as weighed)		TOTAL G + B'+D'		7770	39.11	303862			6.95	54038
		TOTAL F + A + C		7740	39.07	302377	3.77	29161		

Transfer to Vehicle Reference Axes

Y = (LATERAL ARM)(cos 29°- 4') - (VERTICAL ARM)(sin 29°- 4')

Z = (LATERAL ARM)(sin 29°- 4') + (VERTICAL ARM)(cos 29°- 4')

Y = (3.77)(.87406) - (6.95)(.48583) = -.08

Z = (3.77)(.48583) + (6.95)(.87406) = 7.91

DESCRIPTION	WEIGHT	X	WX	Y	WY	Z	WZ
TRANSFERRED GROSS (as weighed)	7755	39.09	303120	-.08	-620	7.91	61.342
LESS: Aft Fittings	- 47	27.0	-1269	-.85	40	-.55	26
PLUS: Ballast	52	88.5	4602	0	0	27.5	1430
Splash Fairing	10	21.0	210	0	0	0	0
Wiring	45	52.0	2340	0	0	-50.0	-2250
Battery	15	43.5	652	0	0	7.0	105
Camera	10	50.0	500	0	0	-8.0	- 80
CORRECTED WEIGHT AND C.G.	7840	39.6	310155	-.07	-580	7.73	60573